

## Surgery Before Age Four Associated With Higher Complication and Reoperation Rates

Surgeons from Duke and Stanford Universities found that children who undergo a first-time Chiari decompression surgery before the age of four suffer from higher complication and reoperation rates. To determine this, they used a national, longitudinal claims database with millions of records to identify first-time Chiari (type 1 only) surgeries over a several year span and tracked the patients for specific 90-day complications and reoperations.

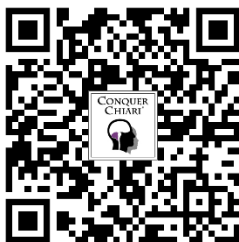
The pre-defined complications included shunt procedures, hydrocephalus, meningitis, CSF leaks, infections, and more. Out of 2,675 Chiari surgeries identified in the database nearly 20% had one of these complications within 3 months. When they looked at the data by age, they found that the complication rate dropped significantly between the ages of 3 and 4. Specifically, in children aged 0-3, the complication rate was 27.7% (32% in the first year of life) compared to 18.4% for children aged 4 and up. Children with tethered cord or syringomyelia were also more likely to experience complications.

The overall reoperation rate was 7.3% out of 1,157 first-time surgeries, and on average occurred 459 days after the initial procedure. The median age of children who underwent a second surgery was 6.5 years compared to 13 years for children who only had one surgery. Like the complication data, the reoperation rates decreased significantly between the ages of 3 and 4. For children aged 0-3, the reoperation rate was 13.2% compared to 5.5% for children aged 4 and up.

The surgeons stress that in many cases surgery in young children cannot and should not be delayed, but in cases where it might be possible, there could be some benefits from waiting until the child is at least four years old.

**Sources:** Age as a predictor of reoperations and complications in surgically managed pediatric Chiari malformation type I. Johnstone T, Barros Guinle MI, Prolo LM, Grant GA. J Neurosurg Pediatr. 2024 Sep 20:1-9. doi: 10.3171/2024.7.PEDS247. Online ahead of print. PMID: 39303314

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